National Institute of Environmental Health Sciences

# The closed city as a strategy to reduce vulnerability of urban areas for climate change

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**Abstract:**

Urbanization, land subsidence and sea level rise will increase vulnerability to droughts in the urbanized low-lying areas in the western part of the Netherlands. In this paper a possibility is explored to decrease vulnerability of urban areas by implementing an alternative water supply option. A four component vulnerability framework is presented that includes threshold capacity, coping capacity, recovery capacity and adaptive capacity. By using the vulnerability framework it is elaborated that current water supply strategies in the Netherlands mainly focus on increasing threshold capacity by constructing improved water storage and delivery infrastructure. A complete vulnerability decreasing strategy requires measures that include all four components. Adaptive capacity can be developed by starting experiments with new modes of water supply. A concept which is symbolically called 'the closed city' uses local urban rainfall as the only source of water supply. The 'closed city' can decrease the water dependence of urban areas on (1) the surrounding rural areas that are diminishing in size and that are increasingly under strain and (2) river water resources that will probably be less constant and reliable as a result of climate change.

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## Resource Description

**Climate Scenario :**

specification of climate scenario (set of assumptions about future states related to climate)

Other Climate Scenario

**Other Climate Scenario:** KNMI Scenarios (G, G+, W, W+)

**Exposure :**

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Sea Level Rise, Other Exposure

**Extreme Weather Event:** Drought

**Other Exposure:** Sea Level Rise; Saltwater Intrusion

**Geographic Feature:**

resource focuses on specific type of geography

None or Unspecified

**Geographic Location:** ☑

resource focuses on specific location

Non-United States

**Non-United States:** Europe

**European Region/Country:** European Country

**Other European Country :** Netherlands

**Health Impact:** ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

**Mitigation/Adaptation:** ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

**Model/Methodology:** ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction

**Resource Type:** ☑

format or standard characteristic of resource

Policy/Opinion

**Timescale:** ☑

time period studied

Medium-Term (10-50 years)

**Vulnerability/Impact Assessment:** ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content